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Published
With international search report.

目 的

組織の展開(把持確保等)
と(系つきクリップで)
行うこと.

特 徴 (20) (100)

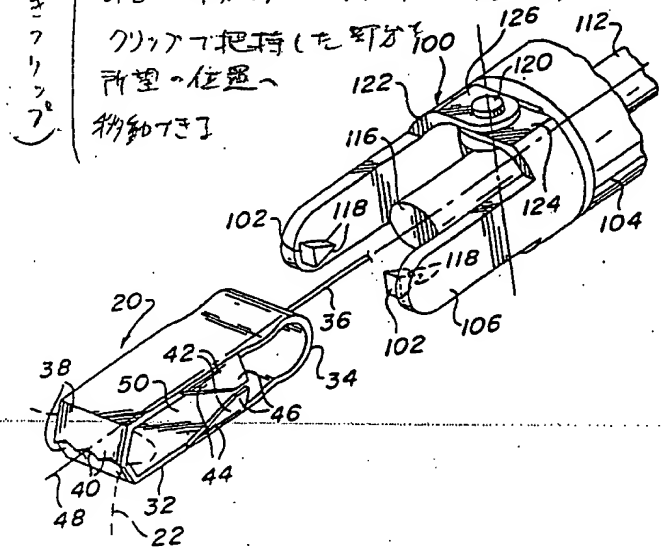
クリップ手段と, 導入器と, クリップ位置決め手段からなる 組織をreflecting (翻転, 折り曲げ) するシステムで.
クリップは一対のジョー(30, 32)とバイアス手段 (34) からなり.

(54) Title: APPARATUS AND METHODS FOR CLAMPING TISSUE AND REFLECTING THE SAME

(57) Abstract

A system and method of use for reflecting tissue located within the body of a living being. The system comprises at least one clip (20), a clip introducer instrument (100), a positioning member in the form of a tension cable assembly, and a clip removal instrument. The introducer instrument (100) is arranged for delivering the clip (20) through a small percutaneous incision or puncture to the situs of the tissue. The clip (20) has a pair of jaws (30, 32) defining a mouth (40) therebetween and are moveable between an open and a closed position. The jaws (30, 32) are biaised to the closed position by a biaising member (34) which is actuatable via the same or another percutaneous incision or puncture so that at least a portion of the tissue is trapped within the clip's mouth (40) when it closes. The tension cable assembly comprises a flexible cable (36) having a distal end portion and a proximal portion, and is of small diameter arranged to be extended through any percutaneous incision or puncture from outside the body of the being so that the distal end portion is coupled to the clip (20), with the proximal portion of the cable outside of the body of the being. The proximal portion of the cable is arranged to be moved to cause the portion of tissue trapped within the mouth (40) of the clip (20) to be moved to a desired position. The clip removal instrument is arranged to release the clip (20) from the tissue and to remove it from the being's body, if desired.

(糸つきクリップ)
位置決め手段はクリップに結合する
第1の部分と, 生体外に位置する
第2の部分とがあり, 第2の部分により
クリップで把持した部分を
所望の位置へ
移動できる



センタリングループ ぜっこうに
設けられている (手)

CLAIMS

What is claimed as the invention is:

1. A system for reflecting tissue located within the body of a being, said system comprising at least one clip means, an introducer instrument, and clip positioning means, said introducer instrument being of a small diameter arranged for delivering said clip means through a first small percutaneous incision or puncture in said being to the situs of said tissue and for releasing said clip means from said instrument, said clip means comprising a pair of jaws and biasing means, said jaws defining a mouth therebetween and being moveable between a first orientation wherein said jaws are disposed apart and a second orientation wherein said jaws are disposed closer together, said biasing means being coupled to said jaws and being actuatable to move said jaws from said first orientation to said second orientation so that at least a portion of said tissue is trapped within said mouth of said clip means, said positioning means having a first portion and a second portion, and being arranged to be extended through a percutaneous incision or puncture in the body of said being from outside the body of said being so that said first portion is coupled to said clip means, with said second portion being located outside of the body of said being and arranged to be moved to cause said portion of tissue trapped within the mouth of said clip means to be moved to a desired position within the body of said being.

2. The system of Claim 1 wherein said instrument is arranged for introducing plural clip means through said first incision or puncture in the body of said being.

3. The system of Claim 1 wherein said elongated positioning means comprises a generally flexible, elongated member, and wherein said first portion of said positioning means comprises connecting means for connection to said clip means.

4. The system of Claim 3 wherein said positioning means is arranged for releasable connection to said clip means.

5. The system of Claim 4 wherein said positioning means comprises hook means.

6. The system of claim 3 wherein said positioning means additionally comprises substantially rigid, slidable sleeve means disposed on said flexible member.

7. The system of Claim 6 wherein said positioning means is arranged for releasable connection to said clip means.

8. The system of Claim 7 wherein said positioning means comprises hook means.

9. The system of Claim 3 additionally comprising small diameter passageway means arranged to be located within a second percutaneous incision or puncture in the body of said being, said small diameter passageway means being arranged for receipt of said positioning means therethrough.

10. The system of Claim 9 wherein said passageway means comprises a piercing needle.

11. The system of Claim 1 additionally comprising fixing means for fixing the position of said positioning means with respect to the body of said being.

12. The system of Claim 11 wherein said fixing means is arranged to be releasably secured to said positioning means outside the body of said being and adjacent the percutaneous incision or puncture through which the positioning means extends.

13. The system of Claim 12 wherein said positioning means comprises a generally flexible member to which said fixing means is arranged to be releasably secured, and wherein said first portion of said positioning means comprises connecting means for connection to said clip means.

14. The system of Claim 13 wherein said connecting means is arranged for releasable connection to said clip means.

15. The system of Claim 14 wherein said connecting means comprises hook means.

16. The system of claim 13 wherein said elongated positioning means additionally comprises substantially rigid, slidable sleeve means disposed on said flexible member.

17. The system of Claim 16 wherein said positioning means is arranged for releasable connection to said clip means.

18. The system of Claim 17 wherein said positioning means comprises hook means.

19. The system of Claim 1 additionally comprising release means arranged to be introduced into the interior of the body of said being via a percutaneous incision or puncture to the situs of said clip means, for causing said clip means to release said first portion of said tissue from the mouth of said clip means.

20. The system of Claim 19 wherein said release means is arranged to retract said clip means through said incision or puncture out of the body of said being.

21. A method for reflecting tissue located within the body of a being by use of a clip means and positioning means, said clip means having a pair of jaws and biasing means, said jaws having portions defining a mouth therebetween and being moveable between a first orientation wherein said jaws are disposed apart and a second orientation wherein said jaws are disposed closer together, said biasing means being coupled to said jaws and being actuatable to move said jaws from said first orientation to said second orientation, said method comprising providing an instrument having at least one of said clip means therein, inserting said instrument through a first percutaneous incision or puncture in the body of said being to a location adjacent said tissue, expelling said clip means from said instrument and actuating said biasing means to cause said jaws of said clip means to move to said second orientation so that a portion of said tissue is trapped within said mouth of said clip means, extending said positioning means through a percutaneous incision or puncture in the body of said being so that a first portion of said positioning means is coupled

to said clip means and a second portion of said positioning means is located outside the body of said being, and manipulating said second portion of said positioning means from outside of the body of said being to effect the reflection of said tissue.

22. The method of Claim 22 wherein plural clip means are inserted through said first percutaneous incision or puncture for securement to respective portions of said tissue.

23. The method of Claim 21 wherein said elongated positioning means is extended through a second percutaneous incision or puncture in the body of said being.

24. The method of Claim 22 wherein said elongated positioning means is extended through a second percutaneous incision or puncture in the body of said being.

25. The method of Claim 21 additionally comprising fixing said positioning means to the body of said being adjacent the percutaneous incision or puncture through which said positioning means extends.

26. The method of Claim 25 wherein said positioning means is extended through a second percutaneous incision or puncture in the body of said being.

27. The method of Claim 21 wherein said positioning means includes a flexible member and substantially rigid sleeve means located thereon, and wherein said method comprises manipulating said sleeve means to direct said first portion of said positioning means toward said clip means so that it may be coupled thereto.

28. The method of Claim 27 additionally comprising fixing said positioning means to the body of said being adjacent the percutaneous incision or puncture through which said positioning means extends.

29. The method of 27 additionally comprising sliding said sleeve means away from the percutaneous incision or puncture through which said positioning means extends.

30. The method of Claim 29 additionally comprising fixing said positioning means to the body of said being adjacent the percutaneous incision or puncture through which said positioning means extends.

31. A system for effecting the positioning of a first portion of tissue located within the body of a being, said system comprising at least one clip, positioning means for said clip, and an introducer instrument, said introducer instrument being of a small diameter arranged for delivering said at least one clip through a small percutaneous incision or puncture in the body of said being to the situs of said first portion of tissue, said instrument being arranged to be operated to free said clip therefrom when said clip is within the body of said being, said clip comprising a pair of jaws and biasing means, said jaws having portions defining a mouth therebetween, said jaws being moveable between a first orientation wherein said portions of said jaws are disposed apart and a second orientation wherein said portions of said jaws are disposed closer together, said biasing means being coupled to said jaws and being actuatable, whereupon said jaws move from said first orientation to said second orientation so that a portion of said tissue is trapped within said mouth of said clip, said positioning means having a first portion and as second portion and being arranged to be extended through a percutaneous incision or puncture in the body of said being so that said first portion is located outside the body of said being and said second portion is coupled to said clip, said first portion of said positioning means being arranged to be moved to cause said portion of tissue trapped within said mouth of said clip to be moved to a desired position within the body of said being.

32. The system of Claim 31 wherein said instrument includes means to effect the actuation of said biasing means.

33. The system of Claim 31 wherein said biasing means comprises a spring.

34. The system of Claim 31 wherein said biasing means is resettable to enable said jaws to move to said first orientation so that said first portion of said tissue is released from said mouth.

35. The system of Claim 32 wherein said biasing means is resettable to enable said jaws to move to said first orientation so that said first portion of said tissue is released from said mouth.

36. The system of Claim 35 wherein said instrument includes means for resetting said biasing means.

37. The system of Claim 35 additionally comprising a tool arranged for insertion through a percutaneous incision or puncture in the body of said being for resetting said biasing means.

38. The system of Claim 31 wherein said biasing means comprises a resilient member interposed between said jaws and biasing said portions of said jaws to said second orientation.

39. The system of Claim 38 wherein said biasing means additionally comprises cam means arranged to be engaged by cooperating means, said cooperating means being arranged to move along said cam means to a first point to reset said biasing means, whereupon said portions of said jaws assume said first orientation against the bias of said resilient member.

40. The system of Claim 39 wherein said cooperating means is arranged to move relative to said cam means to a second point wherein said biasing means is actuated.

41. The system of Claim 32 wherein said biasing means comprises a resilient member interposed between said jaws for biasing said portions of said jaws to said second orientation.

42. The system of Claim 41 wherein said biasing means additionally comprises cam means arranged to be engaged by cooperating means, said cooperating means being arranged to move along said cam means to a first point to reset said biasing means, whereupon said portions of said jaws assume said first orientation against the bias of said resilient member.

43. The system of Claim 42 wherein said cooperating means is arranged to move relative to said cam means to a second point wherein said biasing means is actuated.

44. The system of Claim 37 wherein said biasing means comprises a resilient member interposed between said jaws for biasing said portions of said jaws to said second orientation.

45. The system of Claim 44 wherein said biasing means additionally comprises cam means arranged to be engaged by cooperating means, said cooperating means being arranged to move relative to said cam means to a first point thereon to reset said biasing means, whereupon said portions of said jaws assume said first orientation against the bias of said resilient member.

46. The system of Claim 45 wherein said cooperating means is arranged to move relative to said cam means to a second point wherein said biasing means is actuated.

47. The system of Claim 46 wherein said cooperating means comprises cam means forming a part of said instrument.

48. The system of Claim 32 wherein said instrument comprises a hollow member for holding said clip therein.

49. The system of Claim 32 wherein said instrument comprises a pusher member for ejecting said clip therefrom.

50. The system of Claim 48 wherein said instrument comprises a pusher member for ejecting said clip therefrom.

51. The system of Claim 32 wherein said instrument comprises a pair of swing jaws having means for actuating said biasing means.

52. The system of Claim 48 wherein said instrument comprises a pair of swing jaws having means for actuating said biasing means.

53. The system of Claim 49 wherein said instrument comprises a pair of swing jaws having cooperating means for actuating said biasing means.

54. The system of Claim 53 wherein said biasing means comprises a resilient bridging section connecting said jaws of said clip for biasing said portions of said jaws to said second orientation.

55. The system of Claim 54 wherein said biasing means additionally comprises cam means arranged to be engaged by said cooperating means, said cooperating means being arranged to move along said cam means to a first point thereon as said clip is ejected from said instrument to reset said biasing means, whereupon said portions of said jaws assume said first orientation against the bias of said resilient bridging section.

56. The system of Claim 55 wherein said cooperating means is arranged to move along said cam means to a second point as said clip is ejected from said instrument to actuate said biasing means.

57. The system of Claim 56 wherein said swing jaws are moveable to enable said instrument to engage said clip after said clip has trapped said tissue within said mouth to set said biasing means wherein said portions of said jaws are again in said first orientation.

58. The system of Claim 31 wherein said positioning means comprises a tether.

59. The system of Claim 32 wherein said positioning means comprises a tether.

60. The system of Claim 58 additionally comprising a another clip for trapping a second portion of said tissue within the mouth thereof, with said tether of one of said clips being coupled to the other of said clips to form a pulley arrangement.

61. The system of Claim 59 additionally comprising a another clip for trapping a second portion of said tissue within the mouth thereof, with said tether of one of said clips being coupled to the other of said clips to form a pulley arrangement.

62. The system of Claim 31 wherein said positioning means comprises a web of material for covering a third portion of tissue, said third portion of tissue being located adjacent said first portion of said tissue.

63. The system of Claim 32 wherein said positioning means comprises a web of material for covering a third portion of tissue, said third portion of tissue being located adjacent said first portion of said tissue.

64. The system of Claim 62 additionally comprising another clip for trapping a second portion of said tissue within the mouth thereof, said clips being connected to each other by said web to form hammock means, said hammock means covering and holding said third portion of said tissue, said third portion of said tissue also being located adjacent said second portion of said tissue.

65. The system of Claim 63 additionally comprising another clip for trapping a second portion of said tissue within the mouth thereof, said clips being connected to each other by said web to form hammock means, said hammock means covering and holding said third portion of said tissue, said third portion of said tissue also being located adjacent said second portion of said tissue.

66. The system of Claim 31 wherein said biasing means additionally comprises cam means arranged to be engaged by cooperating means, said cooperating means being arranged to move relative to said cam means to a first point to reset said biasing means, whereupon said portions of said jaws assume said first orientation against the bias of said biasing means.

67. The system of Claim 66 wherein each of said jaws includes a distal portion and a proximal portion, said mouth of said clip being formed by said distal portions of said jaws, said cam means being located adjacent said proximal portions of said jaws.

68. The system of Claim 67 wherein said cam means comprise angularly extending free ends of said proximal portions of said jaws.

69. The system of Claim 66 wherein said biasing means biases said proximal portions of said jaws away from each other, while biasing said distal portions of said jaws towards each other.

70. The system of Claim 67 wherein said biasing means biases said proximal portions of said jaws away from each other, while biasing said distal portions of said jaws towards each other.

71. A method for dynamically clamping a first portion of tissue located within the body of a living being by use of a device, said device comprising a clip having a pair of jaws, biasing means, and positioning means, said jaws having portions defining a mouth therebetween, said jaws being moveable between a first orientation wherein said portions of said jaws are disposed apart and a second orientation wherein said portions of said jaws are disposed closer together, said biasing means being coupled to said jaws and being actuatable, whereupon when said biasing means is actuated said jaws move substantially instantaneously from said first orientation to said second orientation, said clip being of a sufficiently small size to pass through a small percutaneous incision or puncture in the body of said being, said method comprising inserting said clip through said incision or puncture, locating said portions of said jaws immediately adjacent said first portion of said tissue, actuating said biasing means to cause said jaws to immediately move to said second orientation so that a portion of said tissue is trapped within said mouth, said positioning means extending through a small percutaneous incision or

puncture in the body of said being and being coupled to said clip.

72. The method of Claim 71 wherein said positioning means comprises tether means, said method comprising causing said tether means to extend from said clip through said small percutaneous incision or puncture to be readily accessible for drawing thereon to effect the movement of said first portion of said the tissue.

73. The method of Claim 71 additionally comprising inserting said clip through a small percutaneous incision or puncture to trap a second portion of internally located tissue in the mouth of said other clip, coupling the tether means of one of said clips to the other of said clips to form a pulley arrangement.

74. The method of Claim 71 wherein said clip additionally comprises a web of material, said method additionally comprising manipulating said device so that said web of material covers a portion of tissue adjacent said first portion of said tissue.

75. The method of Claim 74 additionally comprising inserting another clip through a small percutaneous incision or puncture to trap a second portion of internally located tissue in the mouth of said other clip, coupling the web of said one of said clips to the other of said clips to form a hammock for covering and holding tissue adjacent said first and second portions of said tissue.

76. The method of Claim 71 wherein said positioning means comprises a member which is arranged to be coupled to said clip, said member being extended through a percutaneous incision or puncture to provide a portion thereof outside of the body of said being, said method additionally comprising manipulating said member by said outside portion to effect the positioning of said tissue.

77. The method of Claim 76 wherein said member comprises an elongated flexible element and wherein said method comprises drawing on said element in a proximal direction from outside of the body of said being.

78. The method of Claim 77 wherein said percutaneous incision or puncture through which said positioning means extends is a different percutaneous incision or puncture than that through which said clip is inserted.

FIG. 1

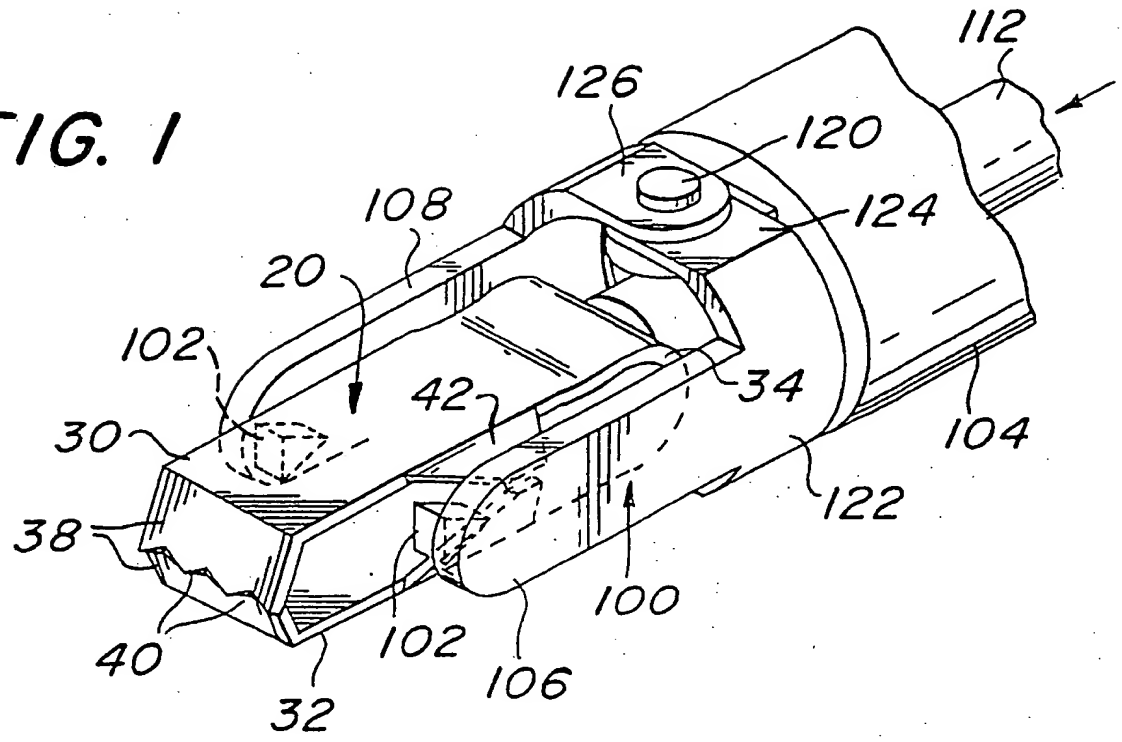

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FIG. 2

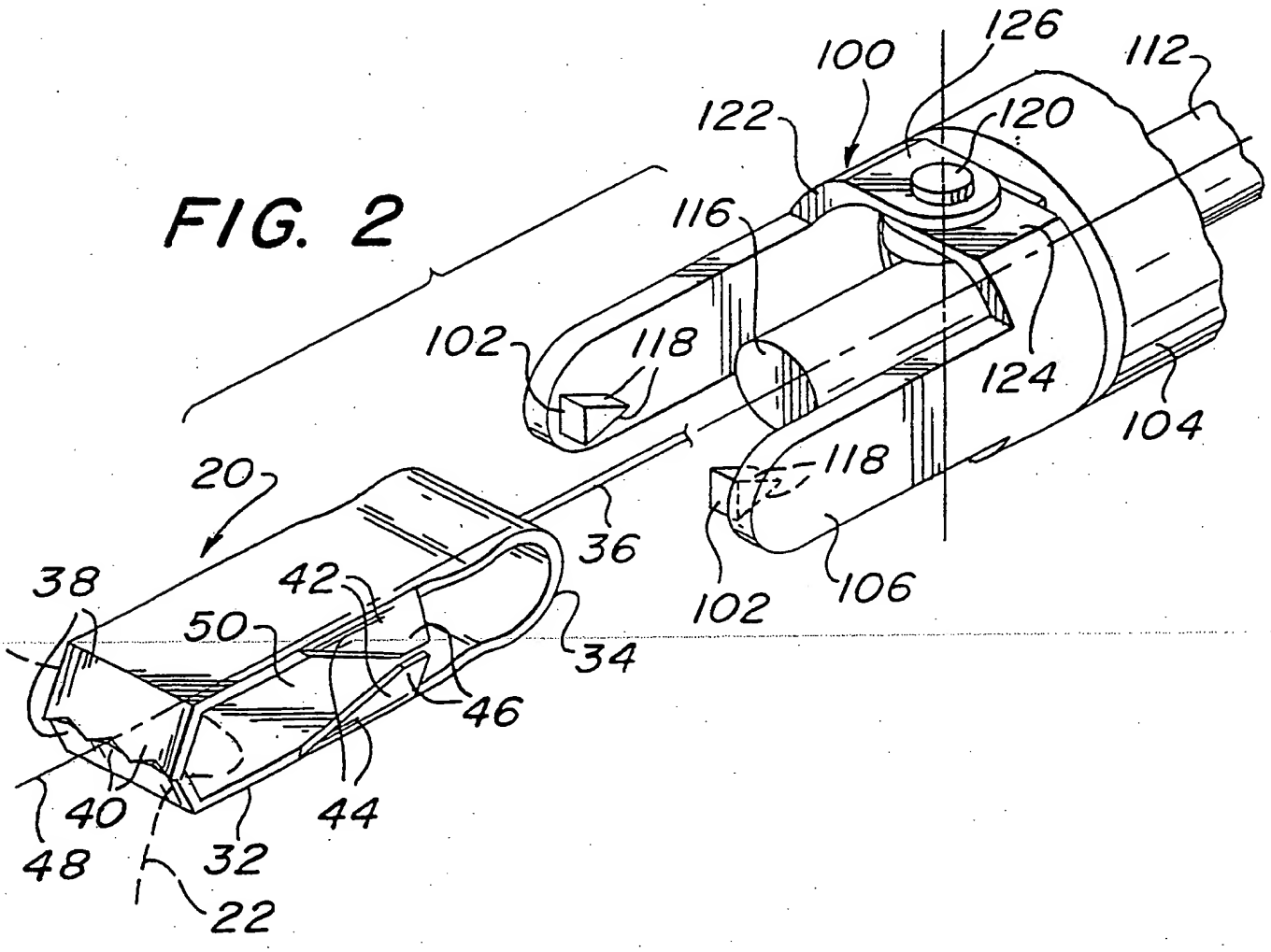
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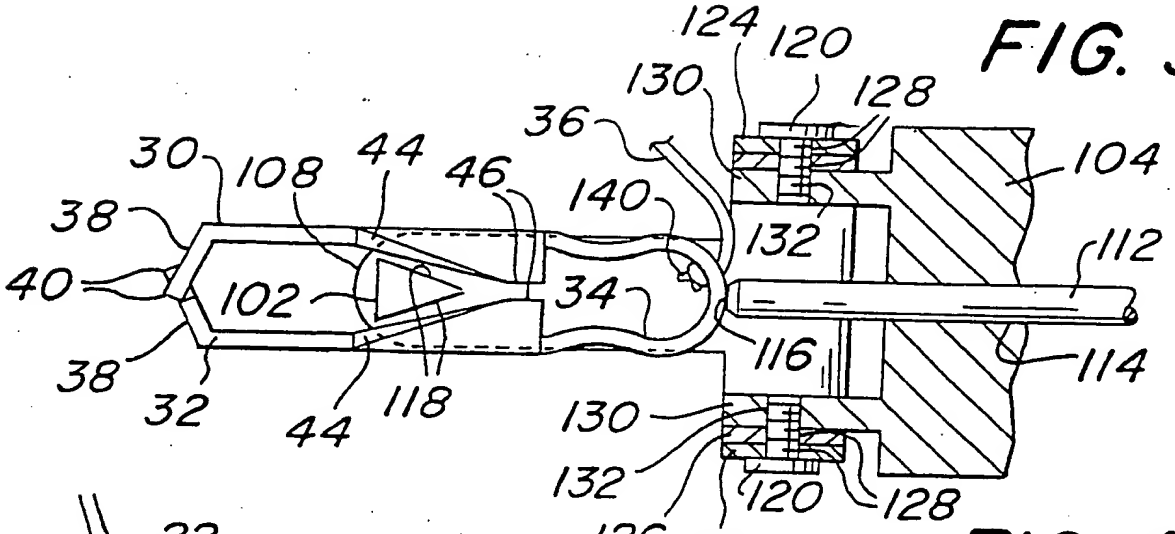
FIG. 3



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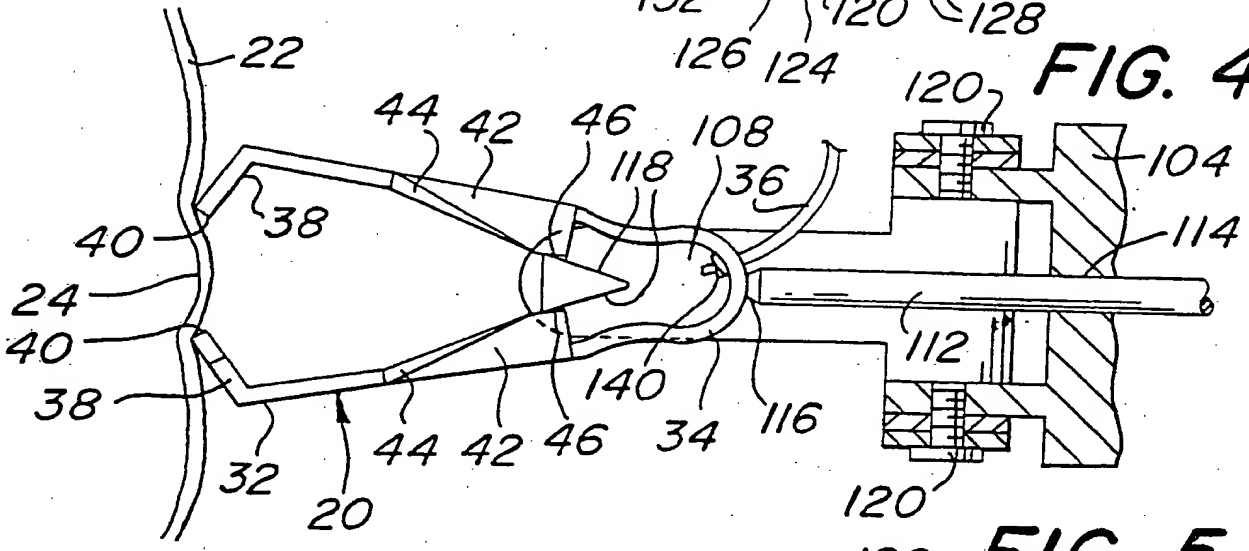


FIG. 5

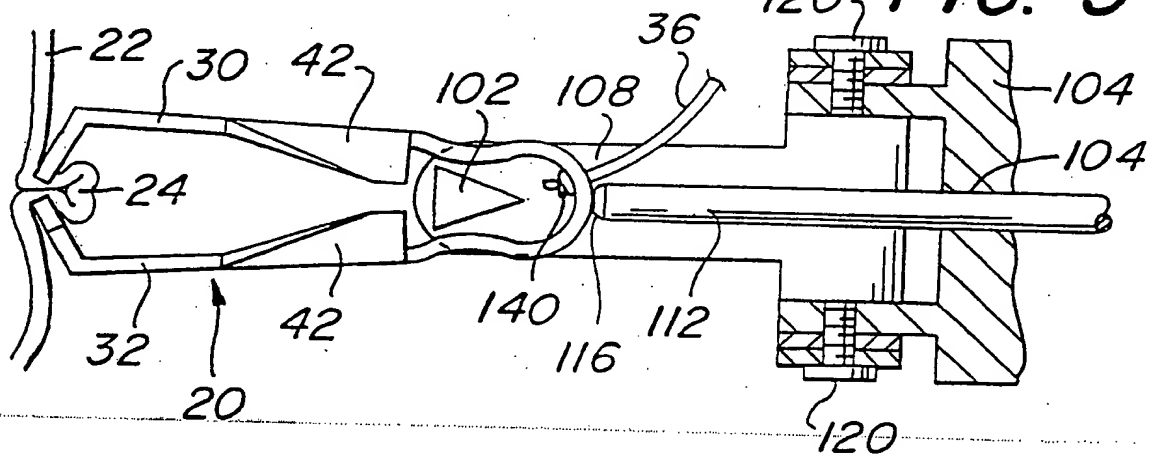


FIG. 6

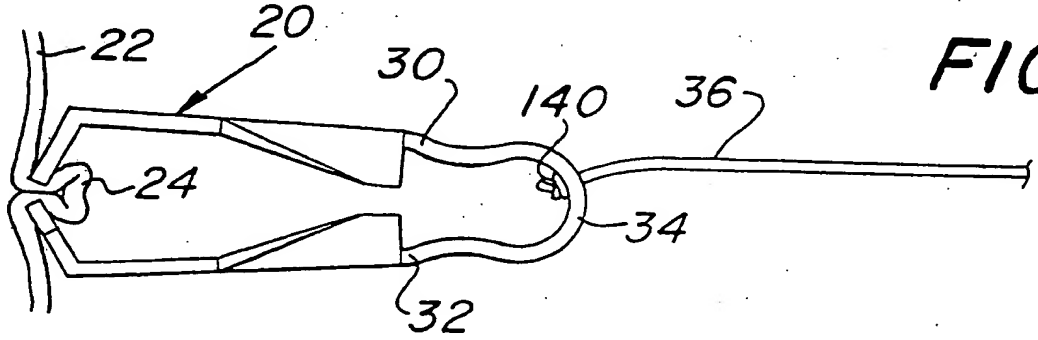


FIG. 7

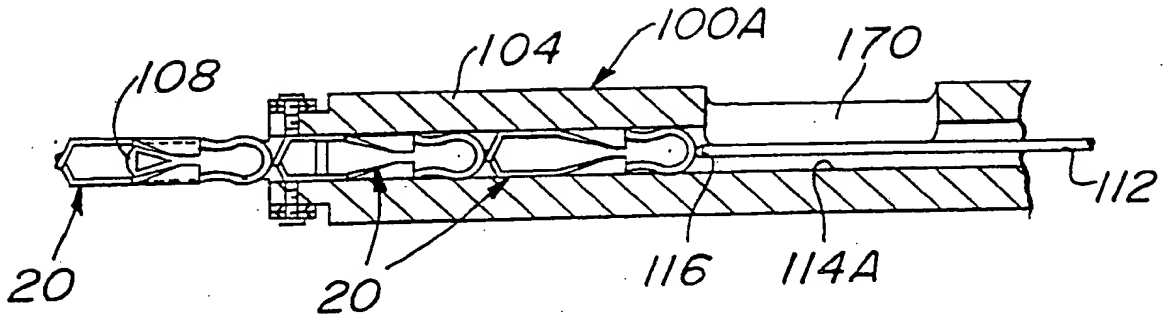


FIG. 8

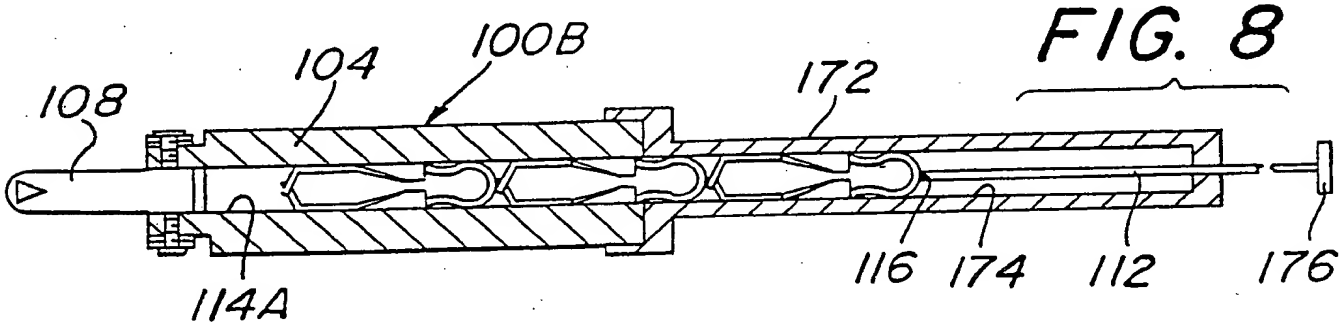


FIG. 9

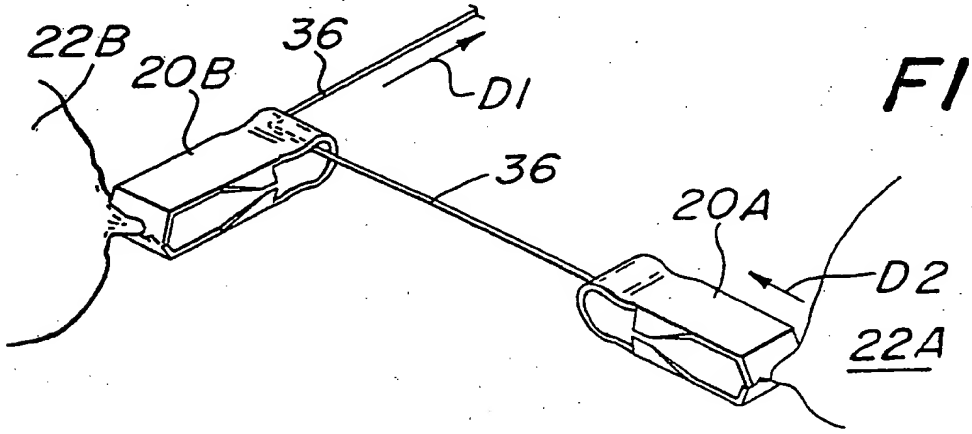


FIG. 10

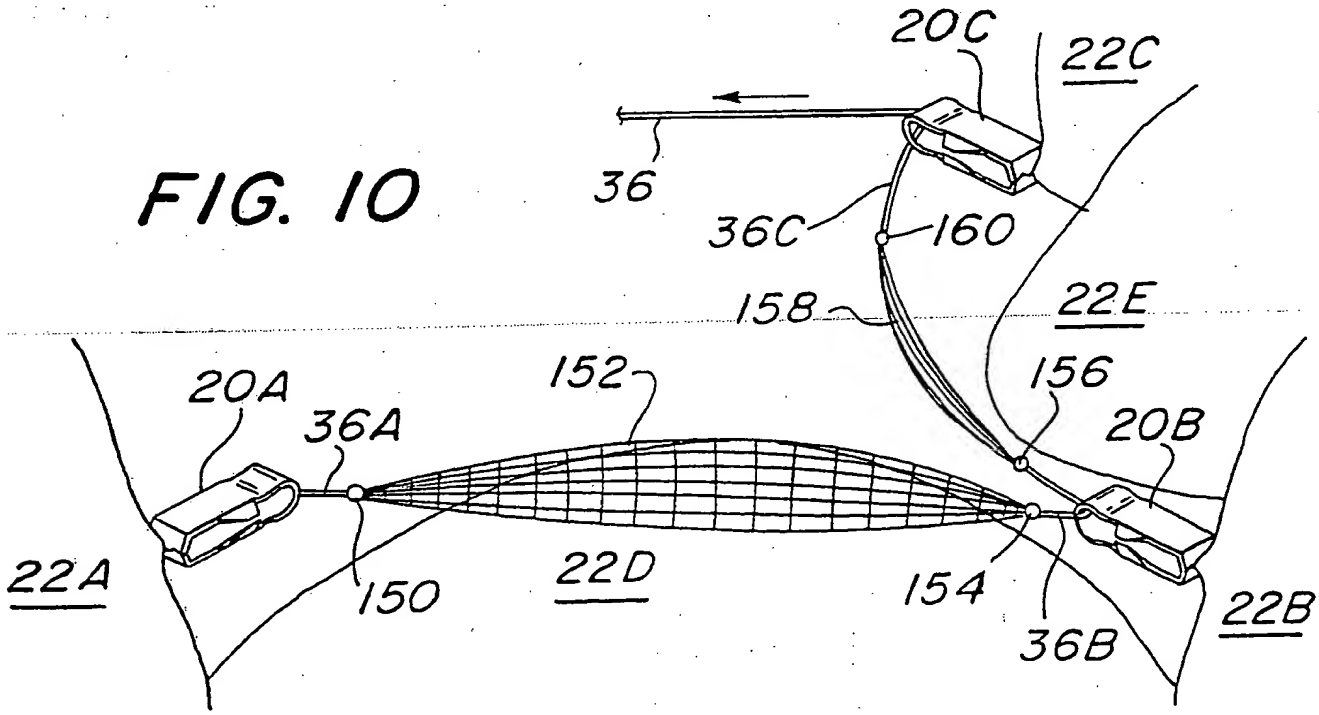


FIG. 11

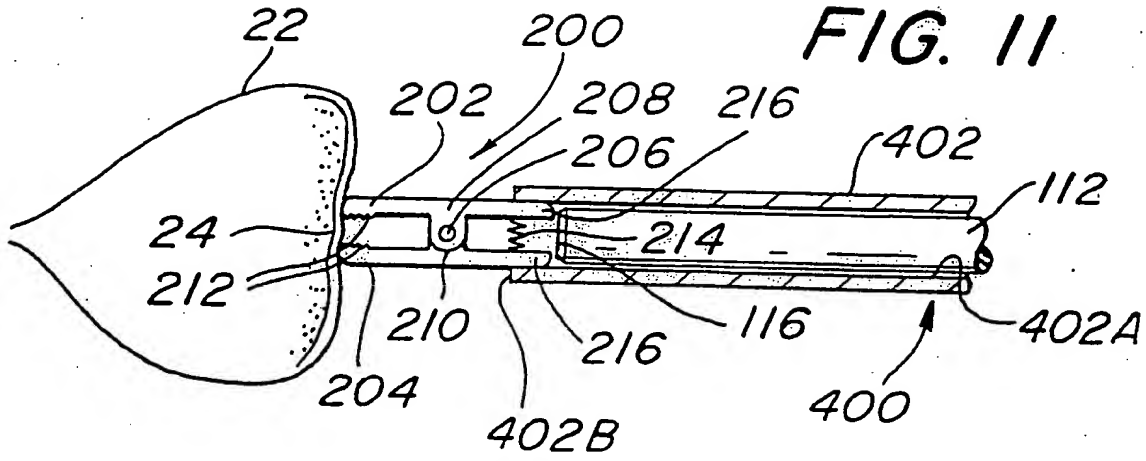


FIG. 12

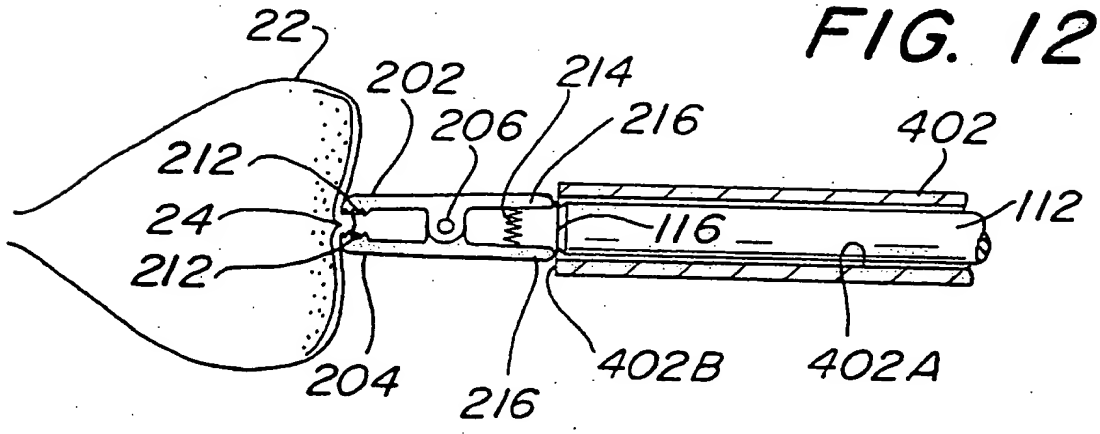


FIG. 13

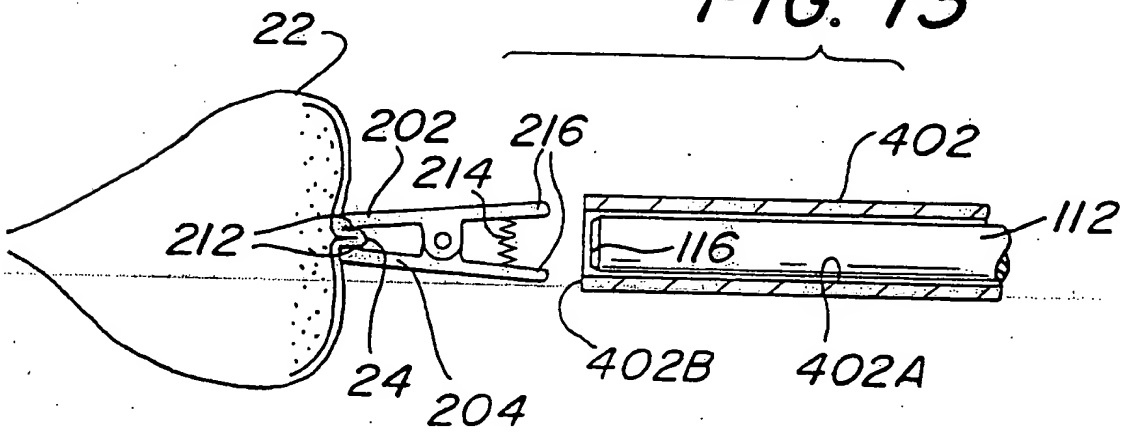
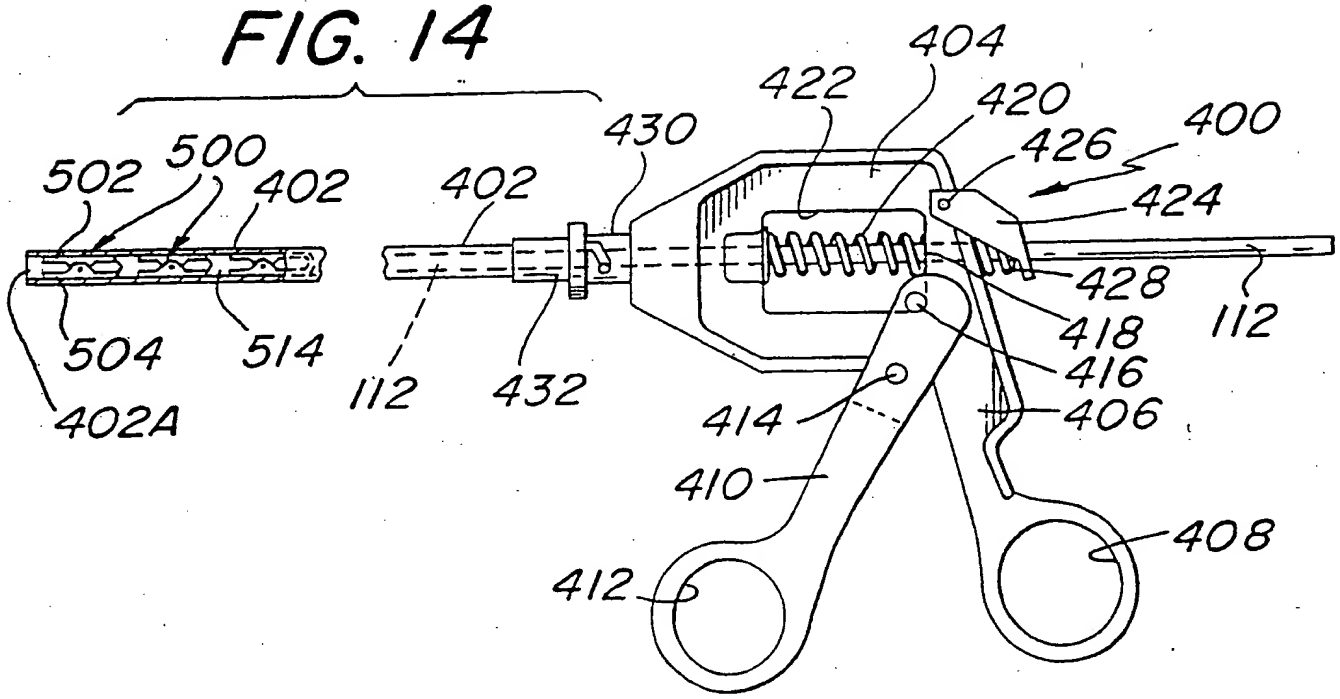


FIG. 14



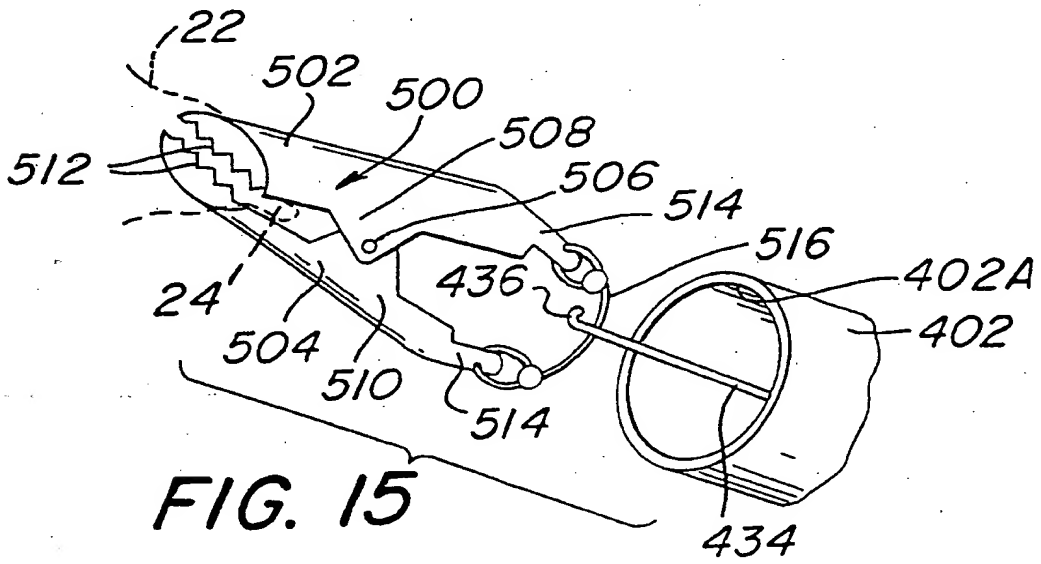
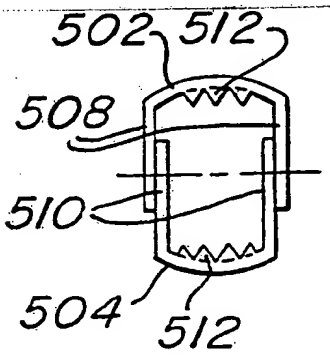


FIG. 15

FIG. 17



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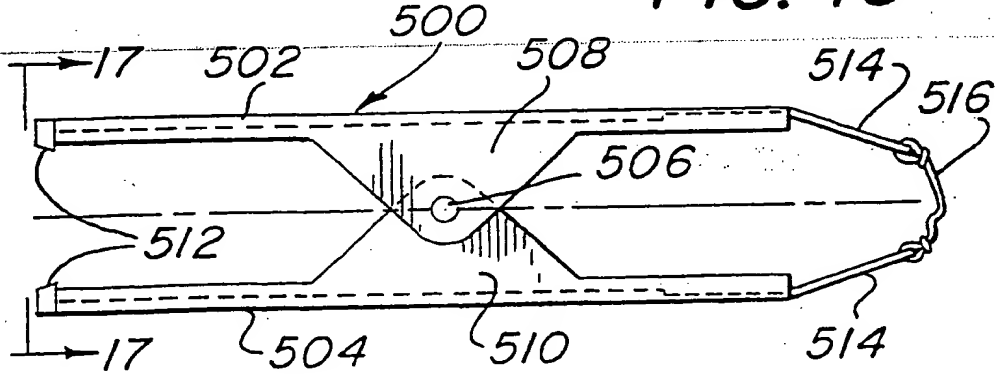

FIG. 19

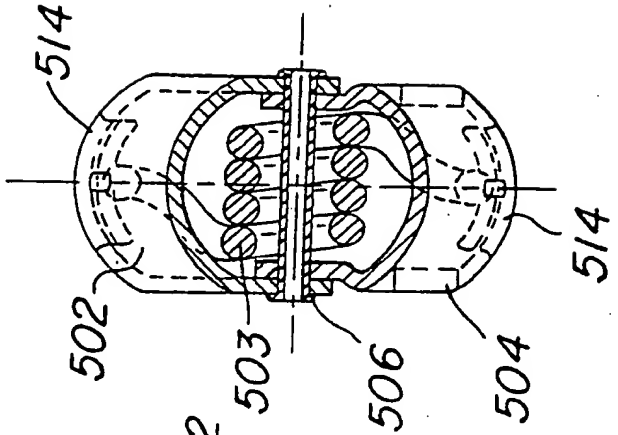
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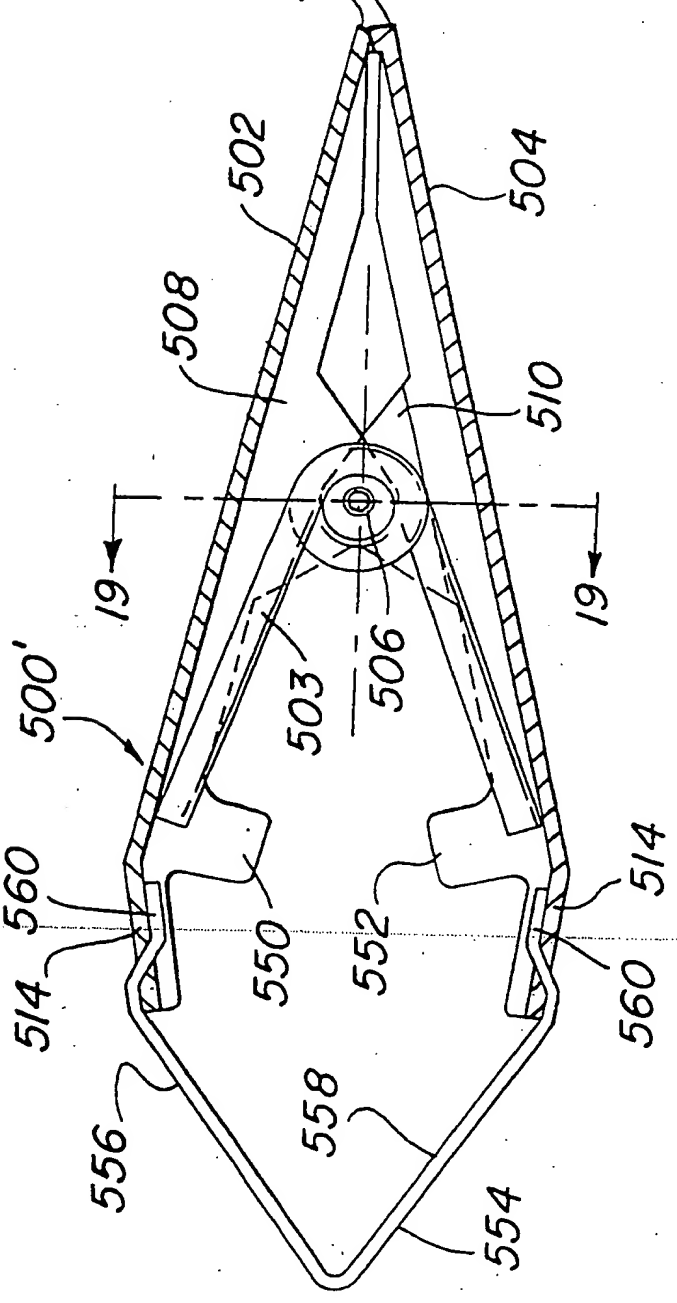
FIG. 18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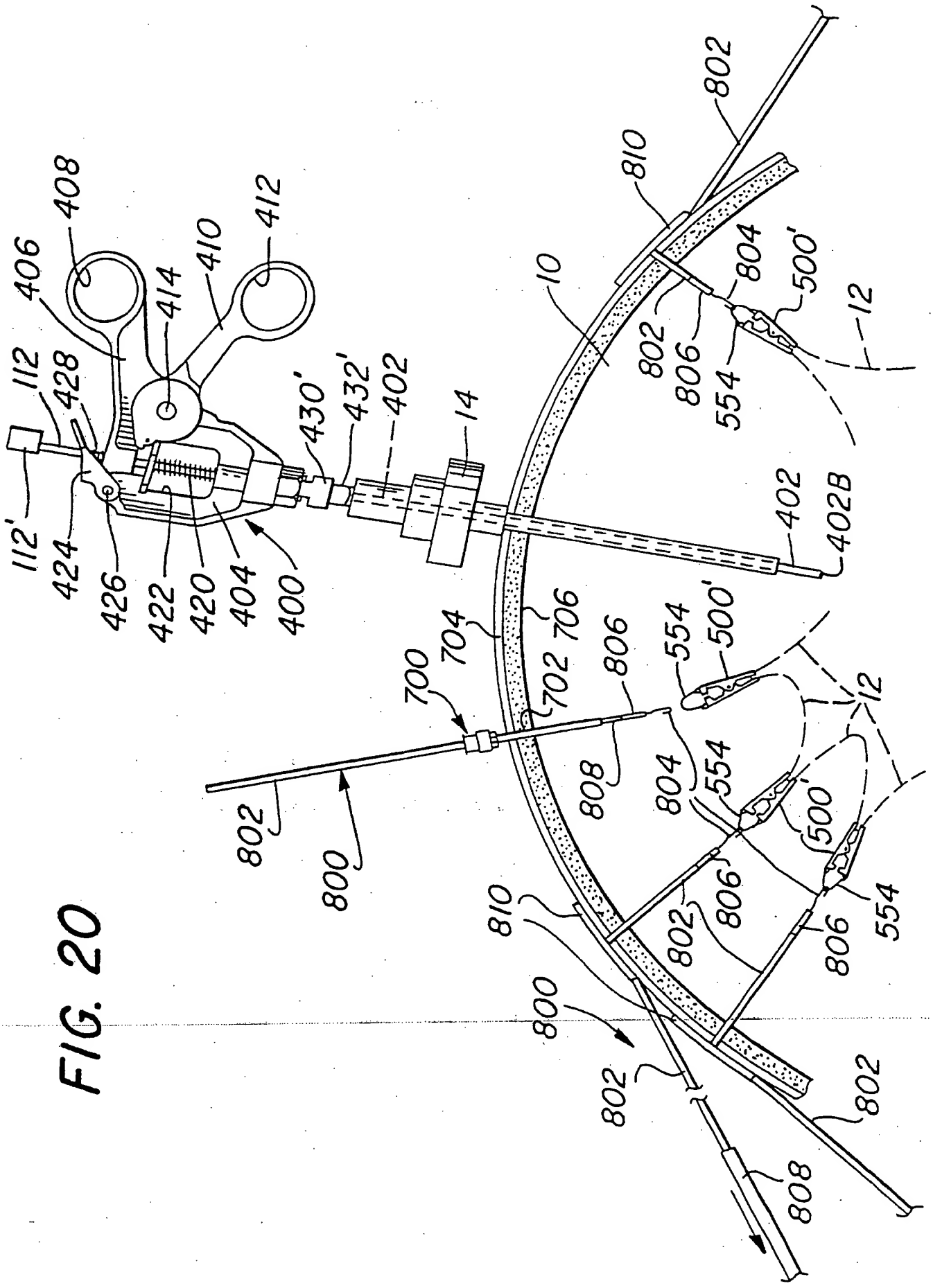
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800

FIG. 20

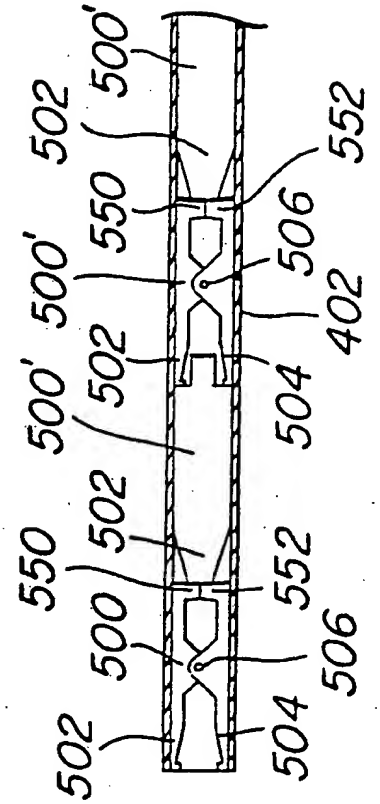

500'
502
550
552
506
500'
402
500'
502
504
502
550
552
500
506
502
504

FIG. 21

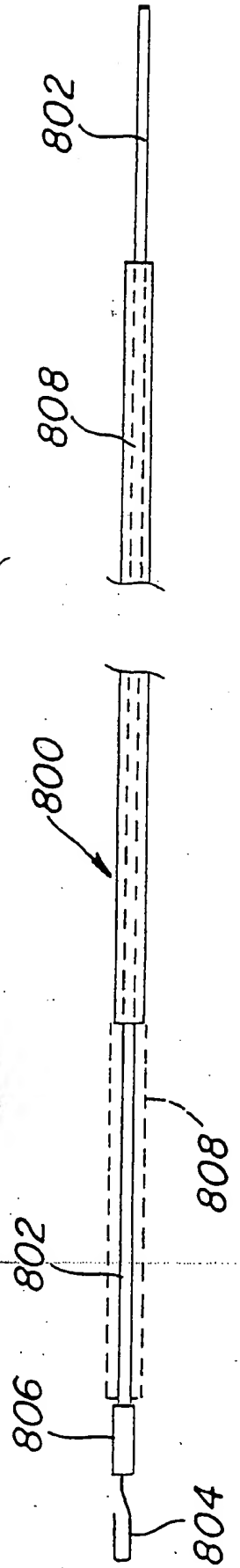

802
808
800
808
802
806
804

FIG. 22

FIG. 23

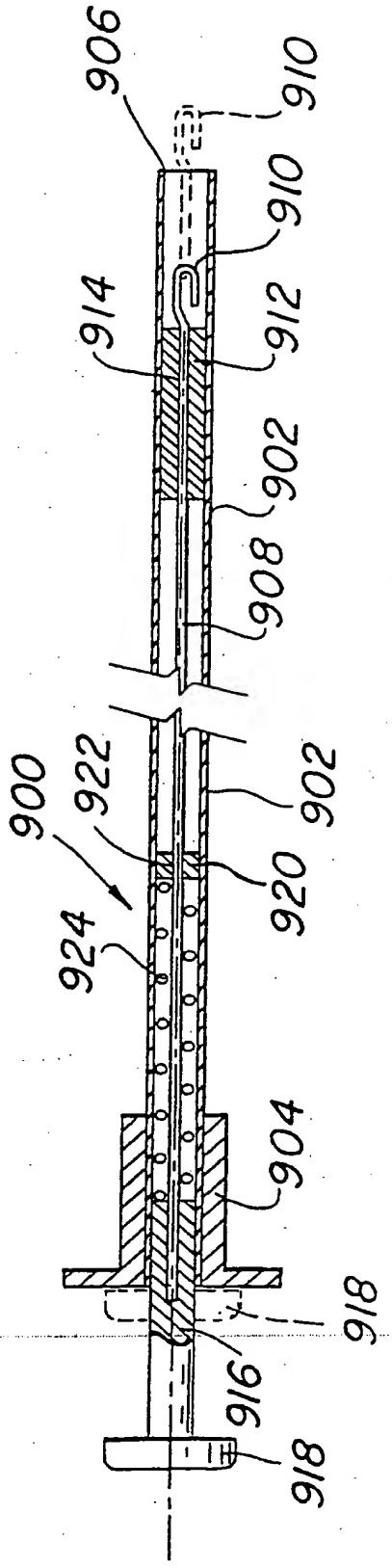
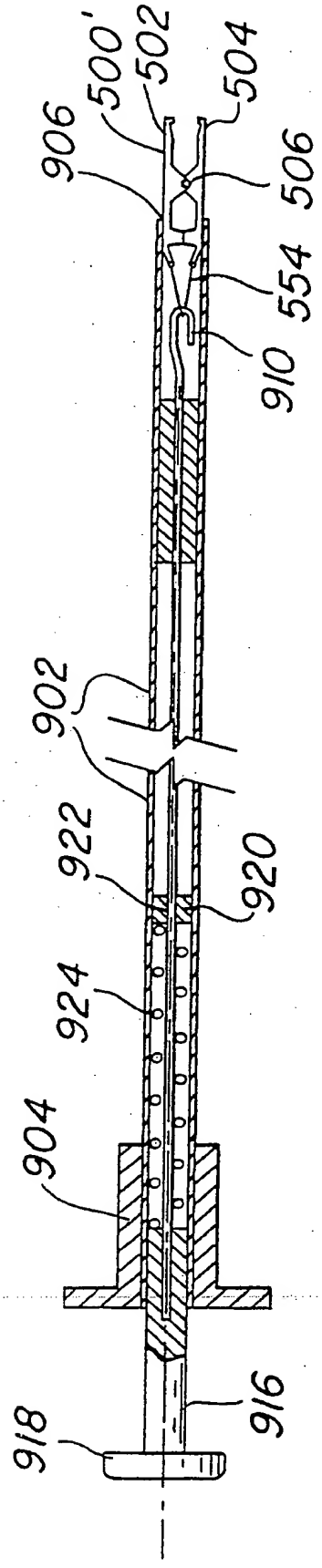

906
910
910
914
912
902
908
900
922
902
920
924
904
918
916
918

FIG. 24


500'
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